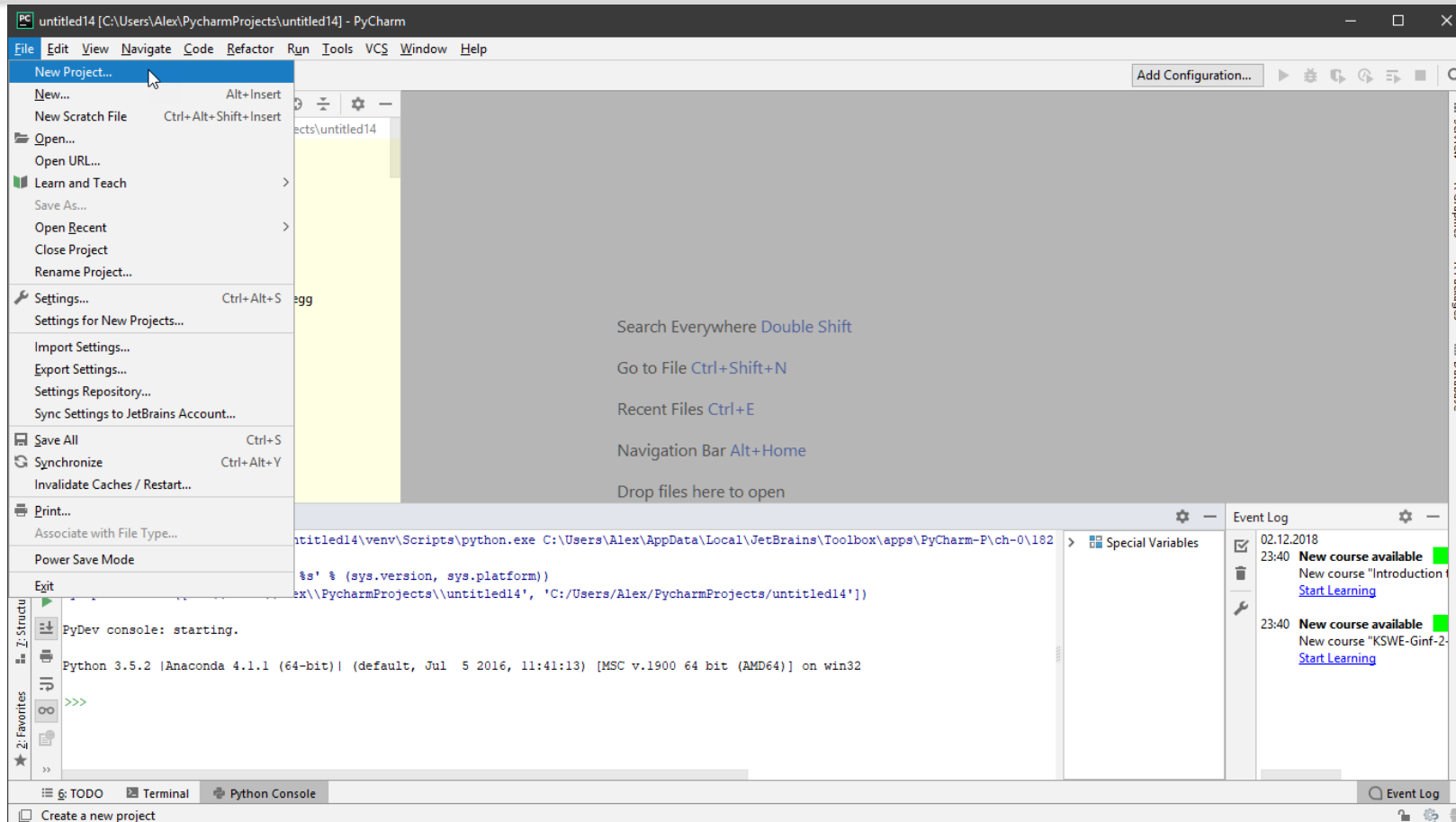
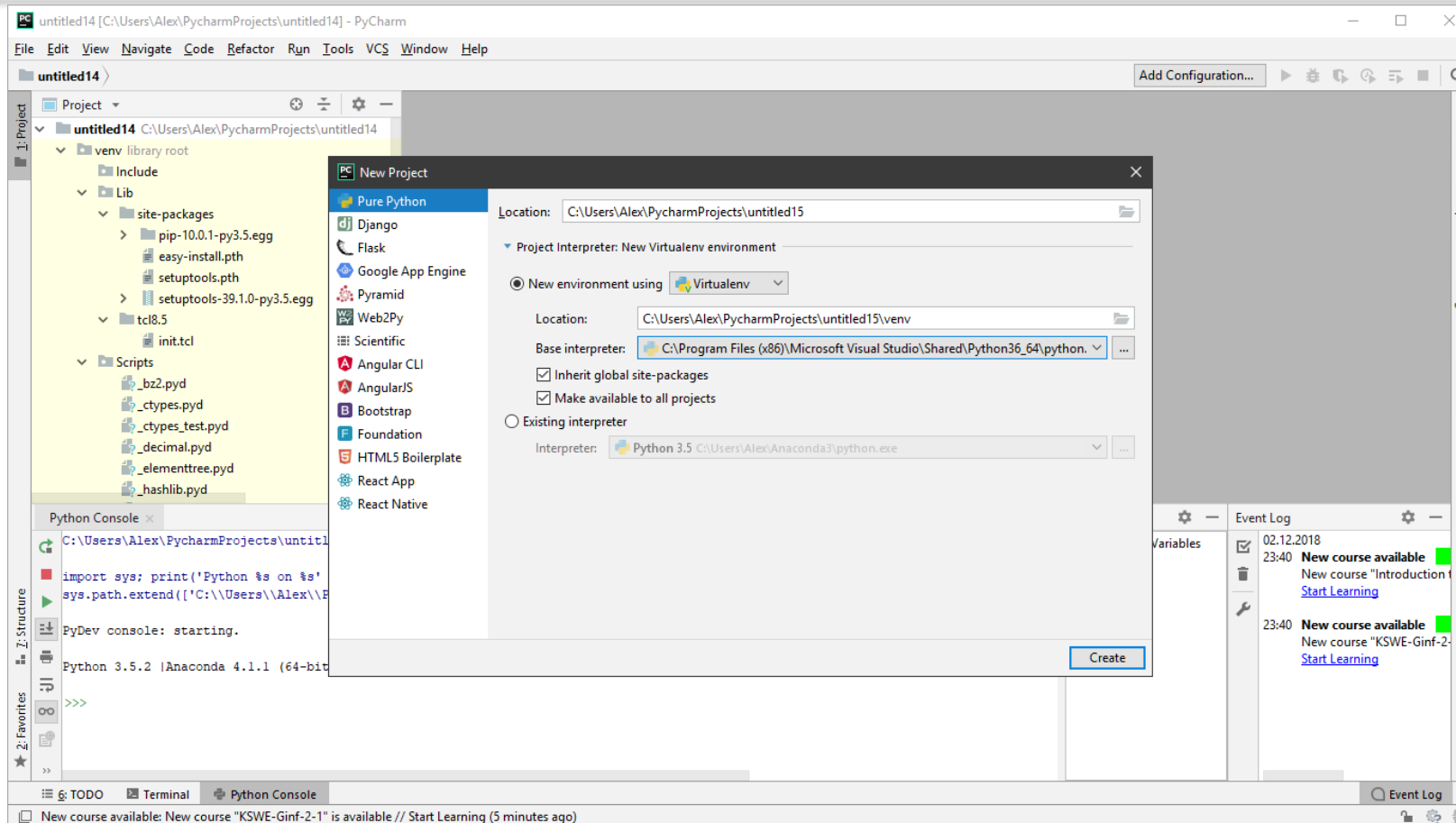


# Новый проект



# Подключаем или создаем среду разработки python



# Старый файл с данными

The screenshot shows the PyCharm IDE interface. The main window displays a CSV file named 'data1.csv' with the following data:

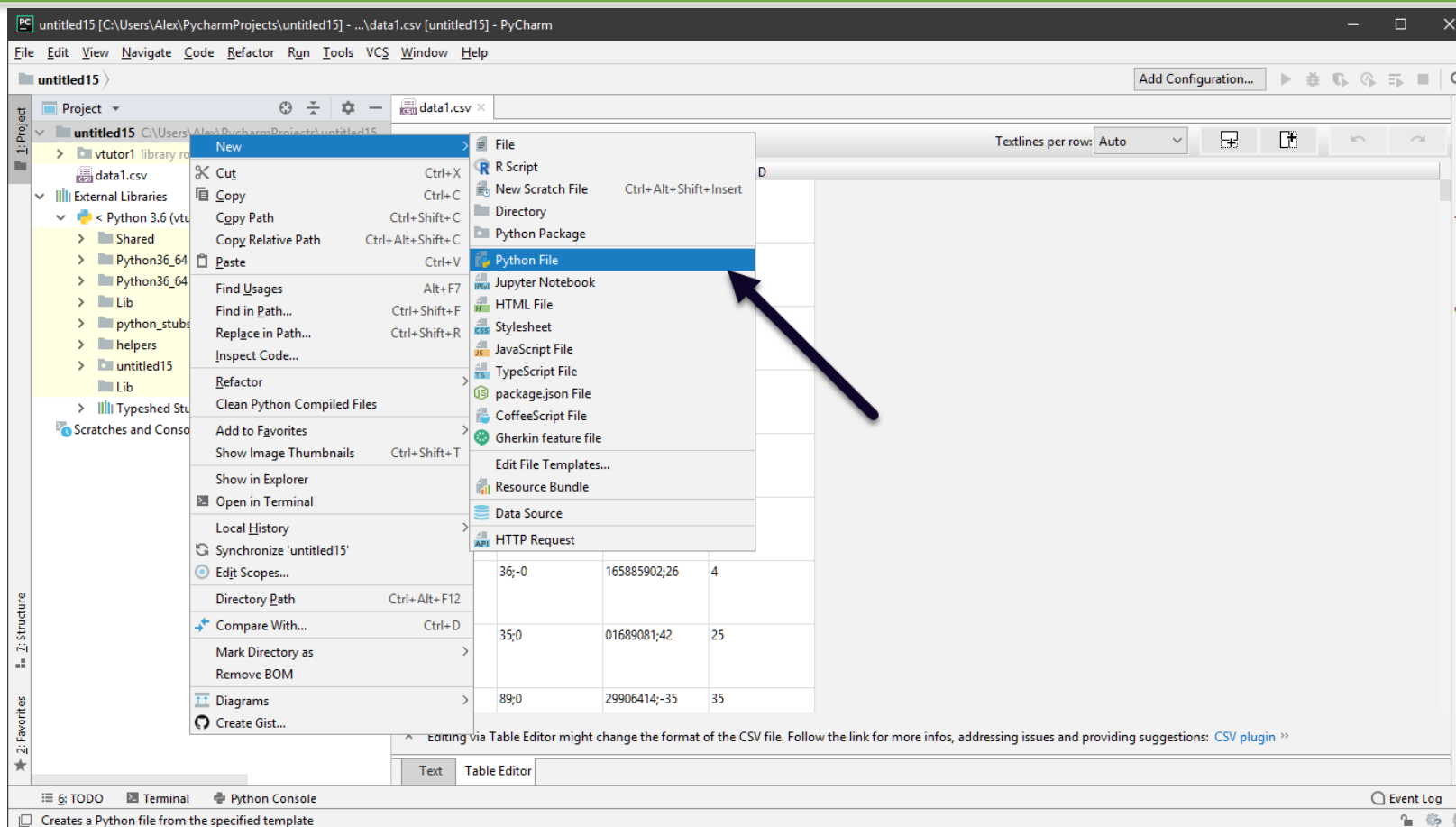
	A	B	C	D
Nxyz				
1;-2	21;-0	289241179;-32	15	
2;-0	35;-0	076083492;-3	25	
3;-1	8;0	054204459;-24		
4;0	4;0	007001044;10		
5;-2	59;-0	040952326;-33	85	
6;1	36;-0	165885902;26	4	
7;2	35;0	01689081;42	25	
8;-2	89;0	29906414;-35	35	

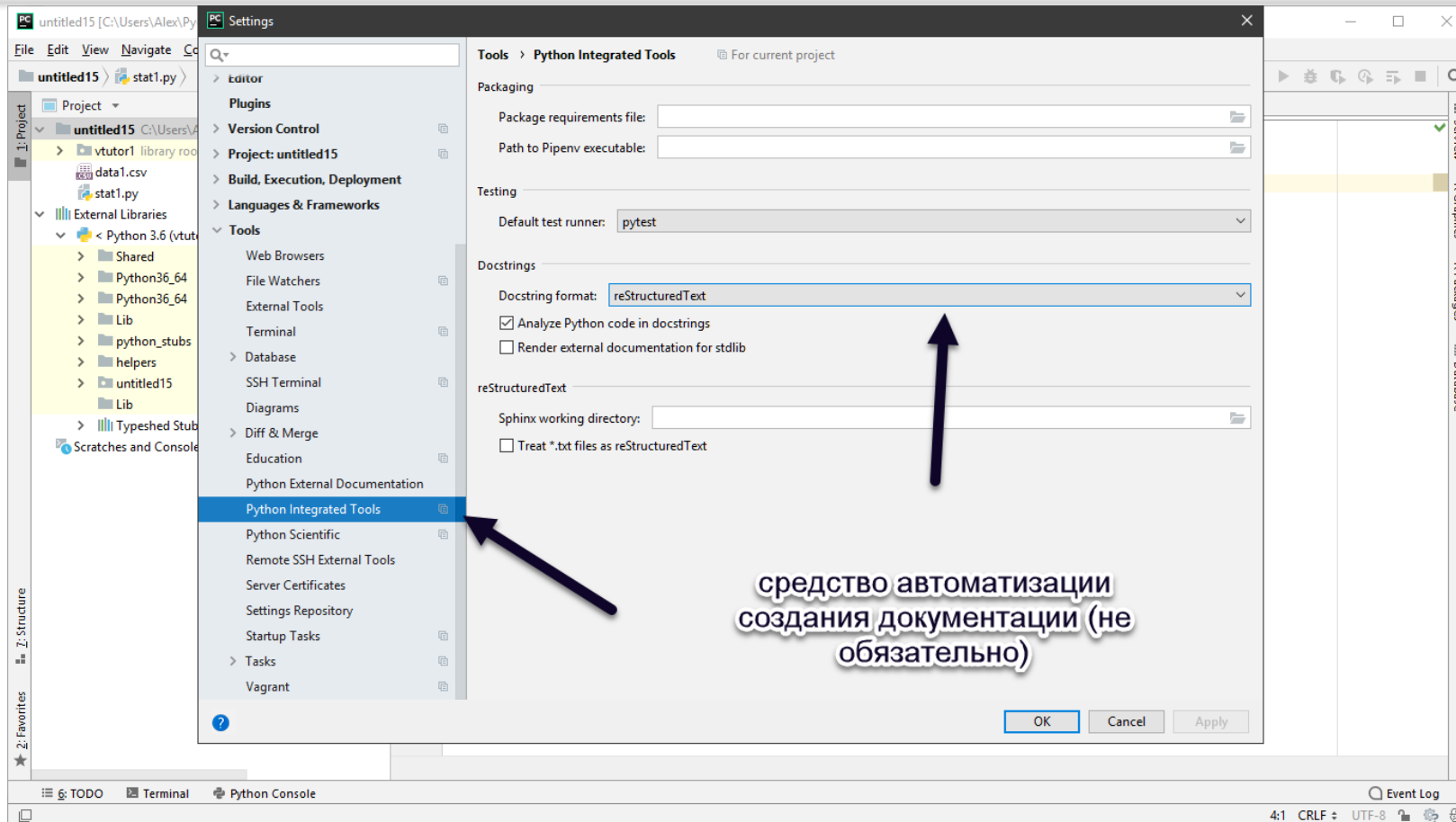
Annotations in the image:

- 1: Points to the 'data1.csv' file in the Project view.
- 2: Points to the 'Table Editor' tab at the bottom of the IDE.
- 3: Points to the Table Editor interface.

At the bottom of the Table Editor, there is a warning message: "Editing via Table Editor might change the format of the CSV file. Follow the link for more infos, addressing issues and providing suggestions: [CSV plugin](#)".

# Новый файл python





# Внешние модули

- Модули надо установить в текущее окружение
- Подключить к программе
- Среда PyCharm предлагает СНАЧАЛА подключить модуль
- Затем, если его нет в окружении – докачать через Интернет и установить
- После скачивания среда тратит время на анализ модуля, это требует времени

The screenshot shows the PyCharm IDE interface. The main editor window displays a Python script named `stat1.py` with the following content:

```
1 #!/usr/bin/env python
2 # -*- coding: utf-8 -*-
3
4 """
5 Расчет статистики с помощью специальных модулей
6 """
7
8 import numpy as np
```

A yellow tooltip points to the `numpy` import on line 8, displaying the message: "No module named numpy more... (Ctrl+F1)".

The left sidebar shows the Project view with the following structure:

- untitled15 (C:\Users\Alex\PycharmProjects\untitled15)
  - vtutor1 (library root)
    - data1.csv
    - stat1.py
  - External Libraries
    - Python 3.6 (vtutor1) (C:\Users\Alex\PycharmProjects\untitled15)
      - Shared
      - Python36\_64
      - Python36\_64
      - Lib
      - python\_stubs
      - helpers
      - untitled15
        - Lib
    - Typeshed Stubs
    - Scratches and Consoles

The right sidebar shows the Documentation view for `matplotlib`, displaying the message: "No documentation found."

The bottom panel shows the Python Console with the following output:

```
import sys; print('Python %s on %s' % (sys.version, sys.platform))
sys.path.extend(['C:\\Users\\Alex\\PycharmProjects\\untitled15', 'C:/Users/Alex/PycharmProjects/untitled15'])

PyDev console: starting.

Python 3.6.6 (v3.6.6:4c1f54eb7, Jun 27 2018, 03:37:03) [MSC v.1900 64 bit (AMD64)] on win32

>>> m3
>>>
```

The status bar at the bottom indicates the time is 10:1, the encoding is CRLF, and the file encoding is UTF-8.

The screenshot shows the PyCharm IDE interface. The main editor window displays a Python file named `stat1.py`. The code contains the following lines:

```
1 #!/usr/bin/env python
2 #-*- coding: utf-8 -*-
3
4 """
5 Расчет статистики с помощью специальных модулей
6 """
7
8 import numpy as np
```

A tooltip is visible over the `import numpy as np` line, displaying the message: "Unused import statement more... (Ctrl+F1)". A black arrow points from the tooltip to the `import` statement in the code.

The left sidebar shows the Project view with the following structure:

- untitled15 (C:\Users\Alex\PycharmProjects\untitled15)
  - vtutor1 library root
    - data1.csv
    - stat1.py
  - External Libraries
    - Python 3.6 (vtutor1) > C:\Users\Alex\PycharmProj...
      - Shared
      - Python36\_64
      - Python36\_64
      - Lib
      - python\_stubs
      - helpers
      - untitled15
        - Lib
      - Typeshed Stubs
    - Scratches and Consoles

The right sidebar shows the Documentation view for the `numpy` module, displaying the message: "No documentation found."

The bottom panel shows the Python Console with the following output:

```
import sys; print('Python %s on %s' % (sys.version, sys.platform))
sys.path.extend(['C:\\Users\\Alex\\PycharmProjects\\untitled15', 'C:/Users/Alex/PycharmProjects/untitled15'])

PyDev console: starting.

Python 3.6.6 (v3.6.6:4c1f54eb7, Jun 27 2018, 03:37:03) [MSC v.1900 64 bit (AMD64)] on win32

>>> 13
```

The status bar at the bottom of the IDE shows the message: "No module named numpy".



The screenshot shows the PyCharm IDE interface. The main editor window displays a Python script named `stat1.py` with the following content:

```
1 #!/usr/bin/env python
2 #-*- coding: utf-8 -*-
3
4 """
5 Расчет статистики с помощью специальных модулей
6 """
7
8 import numpy as np
9
10
```

A context menu is open over the `import numpy as np` line (line 8), with the following options:

- Install package numpy (highlighted)
- Rename reference
- Ignore unresolved reference 'numpy'
- Optimize imports

A black arrow points to the `Install package numpy` option. The left sidebar shows the project structure for `untitled15`, including `data1.csv` and `stat1.py`. The bottom status bar displays the error message: `No module named numpy`. The Python Console at the bottom shows the output of `import sys; print('Python %s on %s' % (sys.version, sys.platform))` and `sys.path.extend(['C:\\Users\\Alex\\PycharmProjects\\untitled15', 'C:/Users/Alex/PycharmProjects/untitled15'])`.

The screenshot shows the PyCharm IDE interface. The main editor displays a Python file named `stat1.py` with the following code:

```
1 #!/usr/bin/env python
2 #-*- coding: utf-8 -*-
3
4 """
5 Расчет статистики с помощью специальных модулей
6 """
7
8 import numpy as np
9 import scipy as scp
10
```

The `import scipy as scp` line is highlighted in yellow. A red error icon is visible next to it. The right-hand pane shows the documentation for `scipy`, which displays the message: "No documentation found."

The left-hand pane shows the project structure for `untitled15`, including a `library root` folder containing `data1.csv` and `stat1.py`, and `External Libraries` for Python 3.6.

The bottom pane shows the Python Console with the following output:

```
import sys; print('Python %s on %s' % (sys.version, sys.platform))
sys.path.extend(['C:\\Users\\Alex\\PycharmProjects\\untitled15', 'C:/Users/Alex/PycharmProjects/untitled15'])

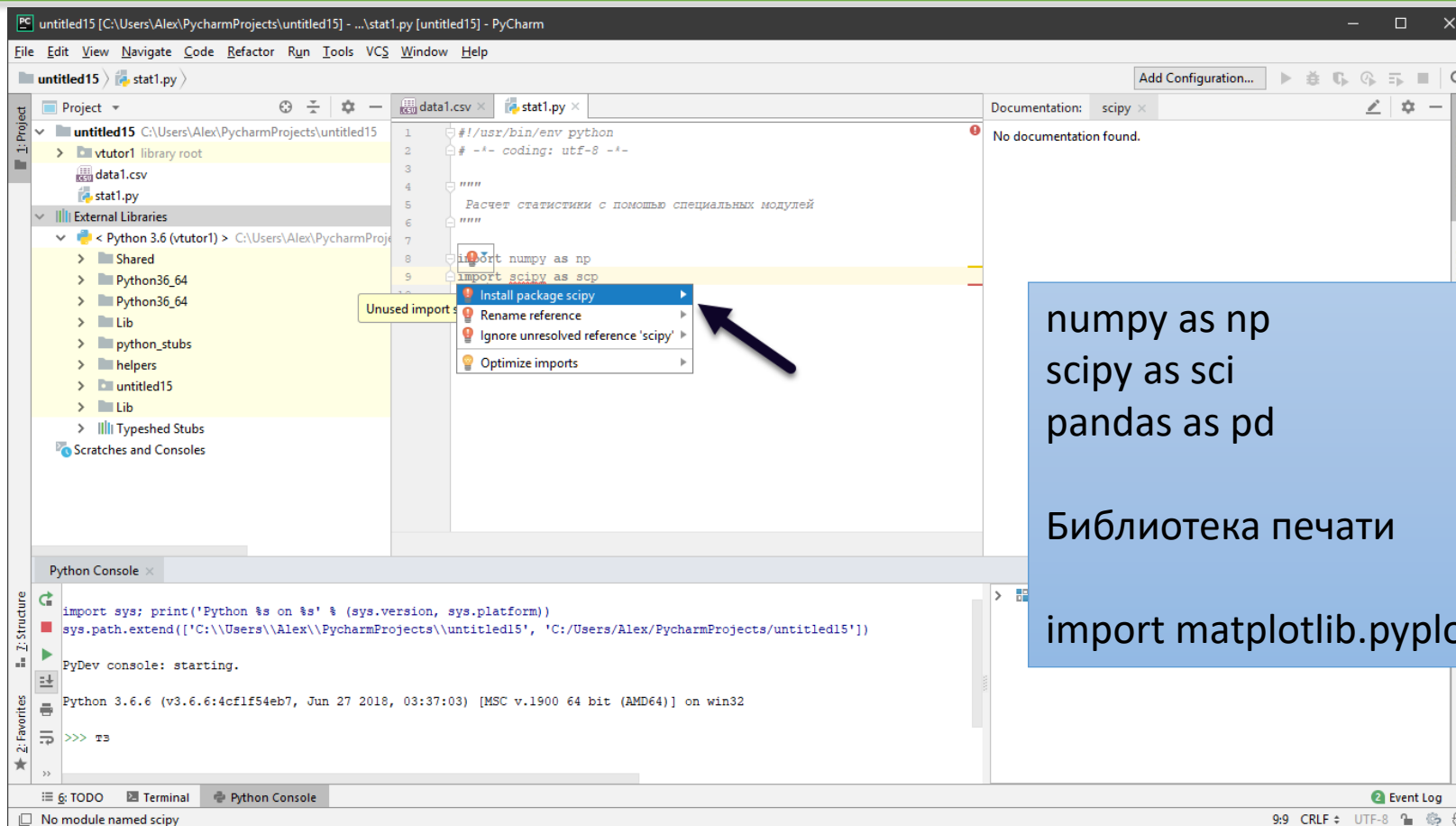
PyDev console: starting.

Python 3.6.6 (v3.6.6:4c1f54eb7, Jun 27 2018, 03:37:03) [MSC v.1900 64 bit (AMD64)] on win32

>>>
>>>
```

The status bar at the bottom indicates the error: "No module named scipy".

# Добавьте (загрузите модули при необходимости)



numpy as np  
scipy as sci  
pandas as pd

Библиотека печати

import matplotlib.pyplot as plt

# Чтение данных

The screenshot displays the PyCharm IDE interface for a project named 'untitled15'. The main editor window shows a Python script 'stat1.py' with the following code:

```
1 #!/usr/bin/env python
2 # -*- coding: utf-8 -*-
3
4 """
5 Расчет статистики с помощью специальных модулей
6 """
7
8 # импорт научных библиотек
9 import numpy as np
10 import scipy as scp
11 import pandas as pd
12
13 # импорт библиотеки печати
14 from pylab import matplotlib
15 # импорт библиотеки графики
16 import matplotlib.pyplot as plt
17
18 data = pd.read_csv("data1.csv")
19
20
21
22
23
```

Annotations in the image:

- 1**: Points to the line `data = pd.read_csv("data1.csv")` in the script.
- 2**: Points to the `run` button in the toolbar.
- 3**: Points to the `data = (DataFrame)` entry in the `Special Variables` panel.

The `Python Console` at the bottom shows the execution output:

```
import sys; print('Python %s on %s' % (sys.version, sys.platform))
sys.path.extend(['C:\Users\Alex\PycharmProjects\untitled15', 'C:/Users/Alex/PycharmProjects/untitled15'])
PyDev console: starting.
Python 3.6.6 (v3.6.6:4cf1f54eb7, Jun 27 2018, 03:37:03) [MSC v.1900 64 bit (AMD64)] on win32
>>> runfile('C:/Users/Alex/PycharmProjects/untitled15/stat1.py', wdir='C:/Users/Alex/PycharmProjects/untitled15')
>>>
```

The `Special Variables` panel shows the variable `data` as a `DataFrame` object.

# Что неверно?

- Разделитель – точка с запятой
- Десятичная точка – запятая
- Лучше так
- `data = pd.read_csv("data1.csv",sep=";",decimal=",")`

untitled15 [C:\Users\Alex\PycharmProjects\untitled15] - ...stat1.py [untitled15] - PyCharm

File Edit View Navigate Code Refactor Run Tools VCS Window Help

untitled15 stat1.py

Project: untitled15 C:\Users\Alex\PycharmProjects\untitled15

- untitled15
  - vtutor1
    - library root
    - data1.csv
    - stat1.py
  - External Libraries
    - Python 3.6 (vtutor1) > C:\Users\Alex\PycharmProj...
    - Shared
    - Python36\_64
    - Python36\_64
    - Lib
    - python\_stubs
    - helpers
    - untitled15
    - Lib
    - Typeshed Stubs
    - Scratches and Consoles

```
1 #!/usr/bin/env python
2 #-*- coding: utf-8 -*-
3
4 """
5 Расчет статистики с помощью специальных модулей
6 """
7
8 # импорт научных библиотек
9 import numpy as np
10 import scipy as scp
11 import pandas as pd
12
13 # импорт библиотеки печати
14 from pylab import matplotlib
15 # импорт библиотеки графики
16 import matplotlib.pyplot as plt
17
18 data = pd.read_csv("data1.csv", sep=";", decimal=",")
19
20 print(data.x)
```

SciView: Data Plots

	N	x	y	z
0	1	-2.21000	-0.28924	-32.15000
1	2	-0.35000	-0.07608	-3.25000
2	3	-1.80000	0.05420	-24.00000
3	4	0.40000	0.00700	10.00000
4	5	-2.59000	-0.04095	-33.85000
5	6	1.36000	-0.16589	26.40000
6	7	2.35000	0.01689	42.25000
7	8	-2.89000	0.29906	-35.35000
8	9	0.35000	-0.00127	14.25000
9	10	0.59000	0.06090	18.85000
10	11	-2.40000	-0.02492	-25.00000
11	12	1.01000	0.11730	27.15000
12	13	-0.37000	-0.00332	7.45000
13	14	-2.74000	0.18902	-27.10000
14	15	1.69000	0.07509	40.35000
15	16	1.59000	-0.03788	39.85000
16	17	0.58000	-0.00855	25.70000

data Format: %

Special Variables

```
> data = (DataFrame) N x y z\n0 1-2.21...View as DataFrame
```

Python Console

```
320 -2.15
321 -0.68
322 2.27
323 -0.29
324 -0.58
325 -0.89
Name: x, Length: 326, dtype: float64
>>>
```

Event Log

51 chars 18:1 CRLF UTF-8

Packages installed successfully: Installed packages: 'matplotlib' (24 minutes ago)

untitled15 [C:\Users\Alex\PycharmProjects\untitled15] - ...stat1.py [untitled15] - PyCharm

File Edit View Navigate Code Refactor Run Tools VCS Window Help

untitled15 stat1.py

Project: untitled15 C:\Users\Alex\PycharmProjects\untitled15

- untitled15
  - vtutor1
    - library root
    - data1.csv
    - stat1.py
  - External Libraries
    - Python 3.6 (vtutor1) > C:\Users\Alex\PycharmProj...
    - Shared
    - Python36\_64
    - python\_stubs
    - helpers
    - untitled15
    - Lib
    - Typeshed Stubs
    - Scratches and Consoles

```
5  Расчет статистики с помощью специальных модулей
6  """
7
8  # импорт научных библиотек
9  import numpy as np
10 import scipy as scp
11 import pandas as pd
12
13 # импорт библиотеки печати
14 from pylab import matplotlib
15 # импорт библиотеки графики
16 import matplotlib.pyplot as plt
17
18 data = pd.read_csv("data1.csv", sep=";", decimal=",")
19
20 print(data.x)
21
22 plt.figure()
23 data.plot()
24 plt.show()
25
26
27
```

SciView: Data Plots

VG (24-bit color) 55.54 KB

stat1(4) x stat1(5) x stat1(6) x stat1(7) x stat1(8) x stat1(9) x stat1(10) x stat1(11) x stat1(12) x stat1(13) x stat1(14) x stat1(15) x stat1(16) x stat1(17) x stat1(18) x

320 -2.15  
321 -0.68  
322 2.27  
323 -0.29  
324 -0.58  
325 -0.89

Name: x, Length: 326, dtype: float64

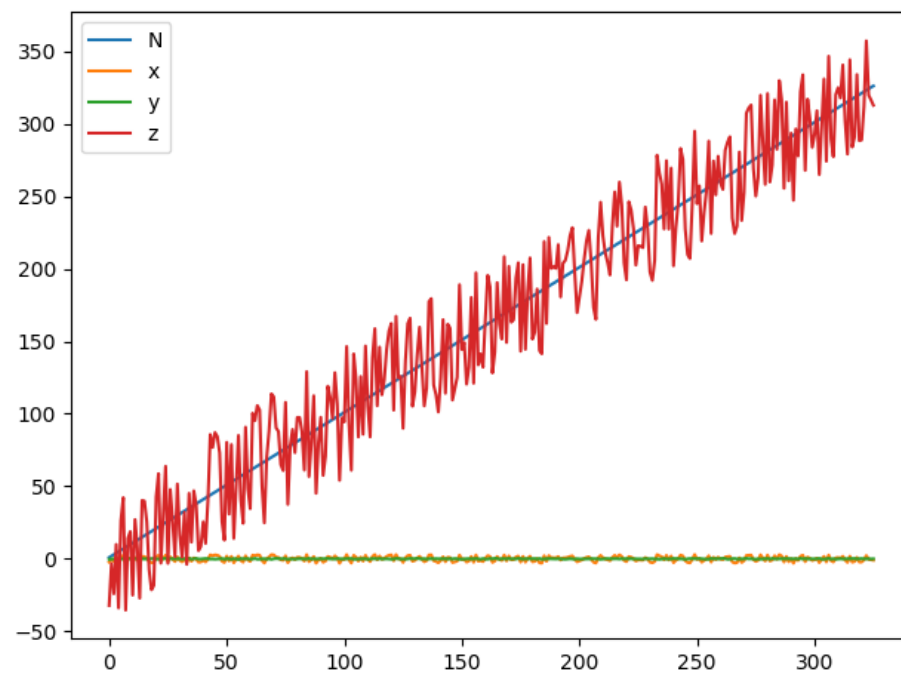
> Special Variables  
> data = (DataFrame) N x y z\n0 1-221..View as DataFrame

Event Log

26:1 CRLF UTF-8

Packages installed successfully: Installed packages: 'matplotlib' (26 minutes ago)

<code>plt.figure()</code>	Создает место для графика (в режиме научных расчетов не обязательно)
<code>data.plot()</code>	Формирует график
<code>plt.show()</code>	Отображает график





untitled15 [C:\Users\Alex\PycharmProjects\untitled15] - ...stat1.py [untitled15] - PyCharm

File Edit View Navigate Code Refactor Run Tools VCS Window Help

myplot.png

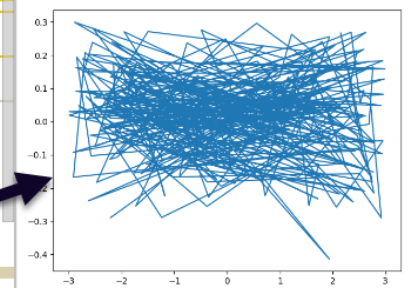
Project

- untitled15 C:\Users\Alex\PycharmProjects\untitled15
  - vtutor1 library root
    - data1.csv
    - stat1.py
  - External Libraries
    - Python 3.6 (vtutor1) > C:\Users\Alex\PycharmProj
      - Shared
      - Python36\_64
      - Python36\_64
      - Lib
      - python\_stubs
      - helpers
      - untitled15
      - Lib
      - Typeshed Stubs
    - Scratches and Consoles

```
6 """
7
8 # импорт научных библиотек
9 import numpy as np
10 import scipy as scp
11 import pandas as pd
12
13 # импорт библиотеки печати
14 from pylab import matplotlib
15 # импорт библиотеки графики
16 import matplotlib as plt
17
18 fig = plt.figure()
19 data.plot()
20 plt.show()
```

SciView: Data Plots

VG (24-bit color) 92.19 KB



stat1(6) x stat1(7) x stat1(8) x stat1(9) x stat1(14) x stat1(15) x stat1(16) x stat1(17) x stat1(18) x stat1(19) x stat1(20) x

```
320 -2.15
321 -0.68
322 2.27
323 -0.29
324 -0.58
325 -0.89
```

Name: x, Length: 326, dtype: float64

```
>>>
```

Special Variables

```
> data = (DataFrame) N x y z\n0 1-221..View as DataFrame
```

Event Log

27:10 CRLF UTF-8

Packages installed successfully: Installed packages: 'matplotlib' (33 minutes ago)

- Такая структура, как фрейм данных pandas является близким аналогом фрейма из языка R
- В частности, он сам «знает» что и как надо напечатать
- Фрейм состоит из переменных (колонок), и строк
- Существуют механизмы выбора отдельных колонок или их множества
- Существуют инструменты отбора данных в колонках (например по условию)
- Потенциально существует возможность поменять местами строки и столбцы (транспонировать таблицу)

untitled15 [C:\Users\Alex\PycharmProjects\untitled15] - ...stat1.py [untitled15] - PyCharm

File Edit View Navigate Code Refactor Run Tools VCS Window Help

untitled15 stat1.py

Project

- untitled15 C:\Users\Alex\PycharmProjects\untitled15
  - vtutor1 library root
  - data1.csv
  - stat1.py
- External Libraries
  - Python 3.6 (vtutor1) > C:\Users\Alex\PycharmProj
    - Shared
    - Python36\_64
    - python\_stubs
    - helpers
    - untitled15
    - Lib
  - Typeshed Stubs
  - Scratches and Consoles

```
11 import pandas as pd
12
13 # импорт библиотеки печати
14 from pylab import matplotlib
15 # импорт библиотеки графики
16 import matplotlib.pyplot as plt
17
18 data = pd.read_csv("data1.csv", sep=";", decimal=",")
19
20 print(data.x)
21
22 plt.plot(data.x)
23 plt.show()
24
25 data.hist()
26 plt.show()
```

SciView: Data Plots

VG (24-bit color) 13.57 KB

stat1(8) x stat1(9) x stat1(10) x stat1(11) x stat1(12) x stat1(13) x stat1(14) x stat1(15) x stat1(16) x stat1(17) x stat1(18) x stat1(19) x stat1(20) x stat1(21) x stat1(22) x

320 -2.15  
321 -0.68  
322 2.27  
323 -0.29  
324 -0.58  
325 -0.89

Name: x, Length: 326, dtype: float64

>>>

Special Variables

data = (DataFrame) N x y z\n0 1-221..View as DataFrame

Event Log

32:1 CRLF UTF-8

Packages installed successfully: Installed packages: 'matplotlib' (34 minutes ago)

untitled15 [C:\Users\Alex\PycharmProjects\untitled15] - ...stat1.py [untitled15] - PyCharm

File Edit View Navigate Code Refactor Run Tools VCS Window Help

untitled15 stat1.py

Project

- untitled15 C:\Users\Alex\PycharmProjects\untitled15
  - vtutor1 library root
    - data1.csv
    - stat1.py
  - External Libraries
    - Python 3.6 (vtutor1) > C:\Users\Alex\PycharmProj
      - Shared
      - Python36\_64
      - Python36\_64
      - Lib
      - python\_stubs
      - helpers
      - untitled15
      - Lib
    - Typeshed Stubs
    - Scratches and Consoles

```
12  
13 # импорт библиотеки печати  
14 from pylab import matplotlib  
15 # импорт библиотеки графики  
16 import matplotlib.pyplot as plt  
17  
18 data = pd.read_csv("data1.csv", sep=";", decimal=",")  
19  
20 print(data.x)  
21  
22 plt.figure()  
23 data.plot()  
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```

SciView: Data Plots

'NG (24-bit color) 8.55 KB

Documentation  
SciView  
R Graphics  
R Packages  
Database

stat1(9) x stat1(10) x stat1(11) x stat1(12) x stat1(16) x stat1(17) x stat1(18) x stat1(19) x stat1(20) x stat1(21) x stat1(22) x stat1(23) x

```
> Special Variables  
> data = (DataFrame) N x y z\n0 1-221..View as DataFrame
```

320 -2.15  
321 -0.68  
322 2.27  
323 -0.29  
324 -0.58  
325 -0.89  
Name: x, Length: 326, dtype: float64  
>>>

Python Console

Event Log

33:10 CRLF UTF-8

Packages installed successfully: Installed packages: 'matplotlib' (36 minutes ago)

data.hist()  
plt.show()  
data.x.hist()  
plt.show()

untitled15 [C:\Users\Alex\PycharmProjects\untitled15] - ...stat1.py [untitled15] - PyCharm

File Edit View Navigate Code Refactor Run Tools VCS Window Help

untitled15 stat1.py

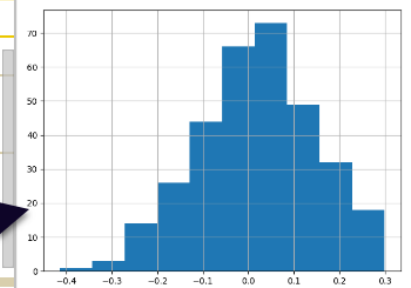
Project

- untitled15 C:\Users\Alex\PycharmProjects\untitled15
  - vtutor1 library root
    - data1.csv
    - stat1.py
  - External Libraries
    - Python 3.6 (vtutor1) C:\Users\Alex\PycharmProj
      - Shared
      - Python36\_64
      - Python36\_64
      - Lib
      - python\_stubs
      - helpers
      - untitled15
      - Lib
    - Typeshed Stubs
    - Scratches and Consoles

```
15 # импорт библиотеки графики
16 import matplotlib.pyplot as plt
17
18 data = pd.read_csv("data1.csv", sep=";", decimal=",")
19
20 print(data.x)
21
22 plt.figure()
23 data.plot()
24 plt.show()
25
26 data.y)
27
```

SciView: Data Plots

'NG (24-bit color) 9.14 KB



Documentation

SciView

R Graphics

R Packages

Database

stat1(11) x stat1(12) x stat1(13) x stat1(14) x stat1(18) x stat1(19) x stat1(20) x stat1(21) x stat1(22) x stat1(23) x stat1(24) x 11

```
320 -2.15
321 -0.68
322 2.27
323 -0.29
324 -0.58
325 -0.89
Name: x, Length: 326, dtype: float64
>>>
```

Special Variables

```
> data = (DataFrame) N x y z\n0 1-221..View as DataFrame
```

Python Console

Terminal

TODO

Event Log

36:10 CRLF UTF-8

Packages installed successfully: Installed packages: 'matplotlib' (37 minutes ago)

data.x.hist()  
plt.show()  
data["y"].hist()  
plt.show()



untitled15 [C:\Users\Alex\PycharmProjects\untitled15] - ...\stat1.py [untitled15] - PyCharm

File Edit View Navigate Code Refactor Run Tools VCS Window Help

untitled15 stat1.py

Project

- untitled15 C:\Users\Alex\PycharmProjects\untitled15
  - vtutor1 library root
  - data1.csv
  - stat1.py
- External Libraries
  - Python 3.6 (vtutor1) C:\Users\Alex\PycharmProjects\untitled15\venv\Python 3.6 (vtutor1)
  - Shared
  - Python36\_64
  - python\_stubs
  - helpers
  - untitled15
  - Lib
  - Typeshed Stubs
  - Scratches and Consoles

```
24 plt.show()
25
26 plt.plot(data["x"], data["y"])
27 plt.hist()
28
29 plt.show()
30
31 data["z"].hist()
32 plt.show()
33
34 plt.scatter(data["N"], data["z"])
35 plt.show()
36
37 data.loc[:, ["x", "y", "z"]].hist()
38 plt.show()
```

SciView: Data Plots

VG (24-bit color) 11.56 KB

stat1(16) x stat1(17) x stat1(18)

```
320 -2.15
321 -0.68
322 2.27
323 -0.29
324 -0.58
325 -0.89
```

Name: x, Length: 326, dtype: float64

```
>>>
```

stat1(21) x stat1(22) x stat1(23)

Special Variables

```
> data = (DataFrame) N x y z\n0 1-2.21..View as DataFrame
```

Event Log

44:23 CRLF UTF-8

Packages installed successfully: Installed packages: 'matplotlib' (50 minutes ago)

untitled15 [C:\Users\Alex\PycharmProjects\untitled15] - ...stat1.py [untitled15] - PyCharm

File Edit View Navigate Code Refactor Run Tools VCS Window Help

untitled15 stat1.py

```
data.hist()
plt.show()

plt.scatter(data["N"], data["z"])
plt.show()

data.loc[:, ["x", "y", "z"]].hist()
plt.show()

data.loc[:, ["x", "z"]].plot.box()
plt.show()
```

SciView: Data Plots

'NG (24-bit color) 7.01 KB

stat1(29) x stat1(30) x stat1(31)

```
320 -2.15
321 -0.68
322 2.27
323 -0.29
324 -0.58
325 -0.89
```

Name: x, Length: 326, dtype: float64

stat1(34) x stat1(35) x stat1(36)

Special Variables

```
> data = (DataFrame)  N  x  y  z\n0  1-221..View as DataFrame
```

47:27 CRLF UTF-8

Event Log

Packages installed successfully: Installed packages: 'matplotlib' (today 1:17)

The screenshot shows the PyCharm IDE with a Python script named `stat1.py` open. The script contains the following code:

```
data["z"].hist()
plt.show()

plt.scatter(data["N"], data["z"])
plt.show()

data.loc[:, ["x", "y", "z"]].hist()
plt.show()

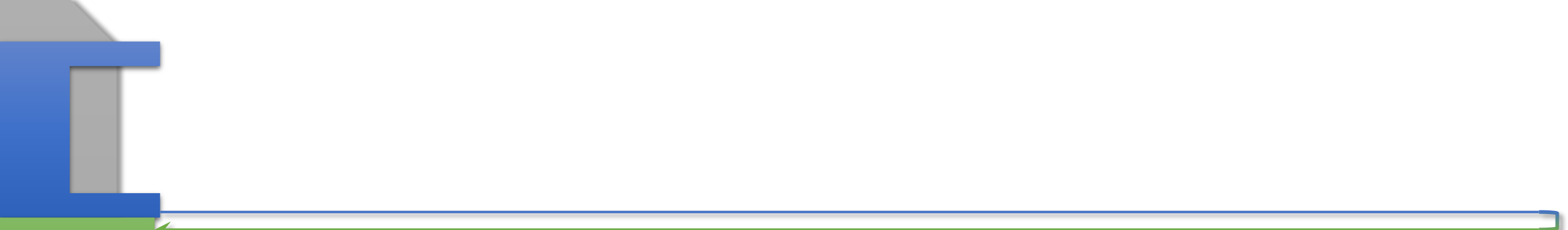
data.loc[:, ["x", "z"]].plot.box()
plt.show()

print("Stat")
print("average".center(64, "="))
print(data.median())
```

The console output shows the following results:

```
Stat
-----
N    163.500000
x     -0.085000
y     0.018796
z    162.250000
dtype: float64
```

The SciView window displays a box plot for the variable 'z'. The plot shows a distribution with a median around 162.25, a mean around 163.5, and a range from approximately 150 to 350. The SciView window also shows a list of variables: `Special Variables` and `data = (DataFrame) N x y z\n0 1-4...`.





# Расчет отдельных показателей

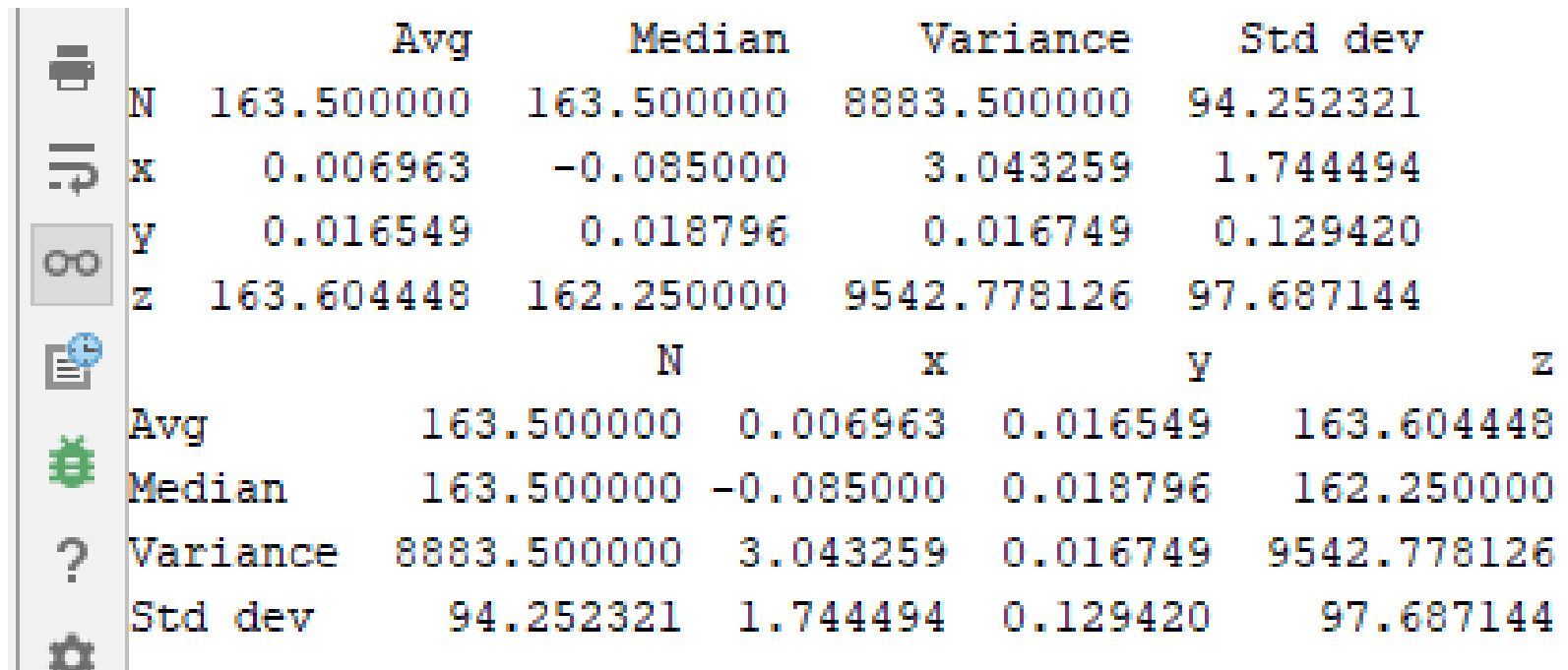
- `print("Stat")`
- `print("average".center(64,"="))`
- `print(data.median())`
- `print("variance".center(64,"="))`
- `print(data.var())`
- `print("std dev".center(64,"="))`
- `print(data.std())`

# Специальная таблица под статистику

- `stat = pd.DataFrame()`
- `stat["Avg"] = data.mean()`
- `stat["Median"] = data.median()`
- `stat["Variance"] = data.var()`
- `stat["Std dev"] = data.std()`
- `print(stat)`
- `print(stat.T)`

# Вывод на экран как в «прямом», так и «развернутом виде»

- `print(stat)`
- `print(stat.T)` – транспонированная таблица



	Avg	Median	Variance	Std dev
N	163.500000	163.500000	8883.500000	94.252321
x	0.006963	-0.085000	3.043259	1.744494
y	0.016549	0.018796	0.016749	0.129420
z	163.604448	162.250000	9542.778126	97.687144

	N	x	y	z
Avg	163.500000	0.006963	0.016549	163.604448
Median	163.500000	-0.085000	0.018796	162.250000
Variance	8883.500000	3.043259	0.016749	9542.778126
Std dev	94.252321	1.744494	0.129420	97.687144